137 The dry-soil forests of the Chaco (figs. 3, 4, 5) consist of, generally, low-growing trees and thorny shrub, the latter often forming deep, impenetrable stretches of jungle. Species of columnar cactus (figs. 5, 6) are fairly common. The bottle tree (Chorisia insignis), which is typical of South American arid regions, is fairly numerously represented, but is never found growing in actual groves (figs. 4, 7). The thorny caraguatá, or chahuar, plant (Bromelia serra) is widely distributed on the Chaco, and is in many respects of great importance to the Indians, its chief and foremost utility being that, from its fibre, excellent yarn can be spun. Of great value to the population of the Chaco are also certain trees, growing in the forest, with edible fruit, of which, perhaps, the algaroba tree (Prosopis alba) is the most important. Game, as a rule, is very scarce in the [136] dry-soil forests; even in a whole day's shooting one may fail to come across more than a few bush partridges or wood pigeons. In some parts, however, ostriches (Rhea americana) are fairly common.

The plains, or steppes (see fig. 8), are often dotted with single tress and shrubs; usually species of acacia. Here and there the fan palm (Copernicia australis) may be seen growing in groves, or even forming whole forests; figs. 9, 10; scattered specimens of this palm are also found in forests that are mainly composed of other trees, fig. 79.

136 137 In the rainy season, when numerous shallow pools have formed, wading birds may be seen in large numbers, and those parts of the Chaco that are nearest to the Andes, are, at least part of the year, *exceedingly abundant* in wildfowl. Then waders and water birds are, naturally, especially common on and around the flooded marshes that, only during a certain portion of the year, largely form on the Chaco. These marshes mostly have a vegetation of typical marsh plants; but I have also noticed that the species of fan palm, that is common in the Chaco, thrives well enough in such *periodically* swampy ground.

Near the Andes, the forests of the Chaco are made up of tall trees with a luxuriant undergrowth and a great wealth of lianas ((figs. 11, 12—14). These forests, which are of an exuberant, tropical, primeval character, abound with game, such as jaguars, pumas, tiger cats, tapirs, wild boar, water pig, deer, ant-bear, armadillos, bush partridges, toucans, parrots, and a number of other birds, suitable for food.

136 The few rivers and watercourses with which the Chaco is supplied, are

[text continues on p. 9]

I: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

very abundant in fish, and in their waters, as in most of the larger lagoons, alligators (Caiman sclerops) are present (fig. 15).

El Gran Chaco was in beginning of this century the country of the free Indians. Of the many tribes that inhabit this vast region, I have come into contact with Choroti, Chiriguano, Toba, Mataco and Tapiete, but it was only from among the first-mentioned that I had an opportunity to obtain any extensive collection.

Fig. 3. Dry soil forest region. Gran Chaco. Bolivia. Photo. Rob. Fries.

In the literature dealing with the Chaco, there was, prior to our expedition, not to be found much information concerning the Choroti. Their tribal name, in the form of »xolota», was, however, known already in the 18th century, when it was, probably for the first time, mentioned by Pedro Lozano, who, in a work published in 1733, enumerates a long string of names of tribes inhabiting the Chaco.[1] In his work, »Explorations dans l'Amerique du Sud», Thouar only gives a few, stray, items of information about the Choroti, he having come across that tribe on the Pilcomayo. The Choroti were, therefore, at the time of our expedition a

[1] Lozano (1).

J: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

Fig. 4. Bottle tree. Chorisia insignis. Dry soil forest region between Caiza and Fort Crevaux. Gran Chaco. Bolivia. Photo. E. v. R.

Fig. 5. Cactus (Cereus and leaf-shaped Opuntia). Dry soil forest region between Caiza and Fort Crevaux. Gran Chaco. Bolivia. Photo. E. v. R.

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1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

137

Fig. 6. Columnar cactus in the dry soil forest region. Boundary district between the Andes and Gran Chaco. Bolivia. Photo. E. v. R.

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1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

137

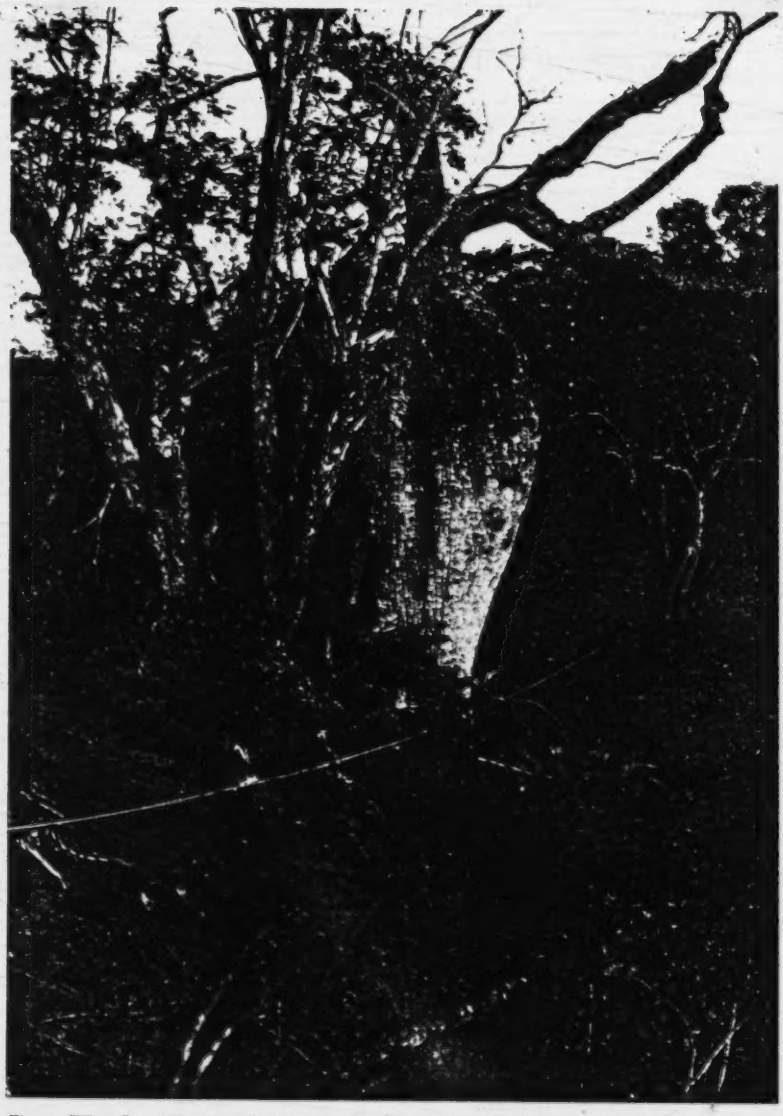

Fig. 7. Bottle Tree (Chorisia insignis). From the dry soil forest area between Caiza and Fort Crevaux. Gran Chaco. Bolivia. Photo. E. v. R.

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291
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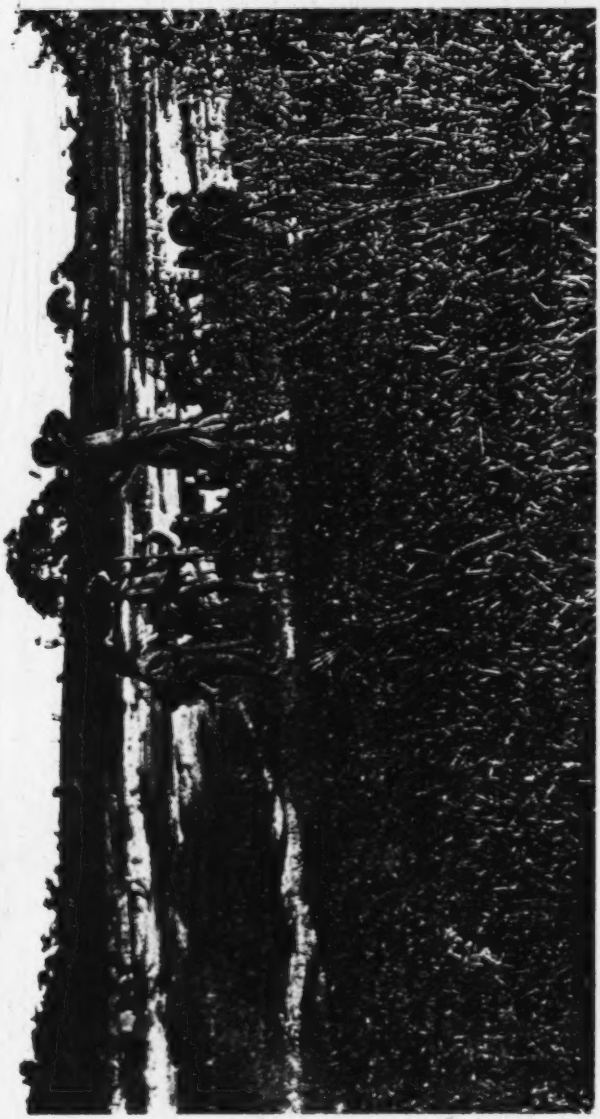

Fig. 8. Steppe with acacias. In foreground, watchful Choroti Indians. Tatarenda, Gran Chaco, Bolivia. Photo. F. v. R.

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133
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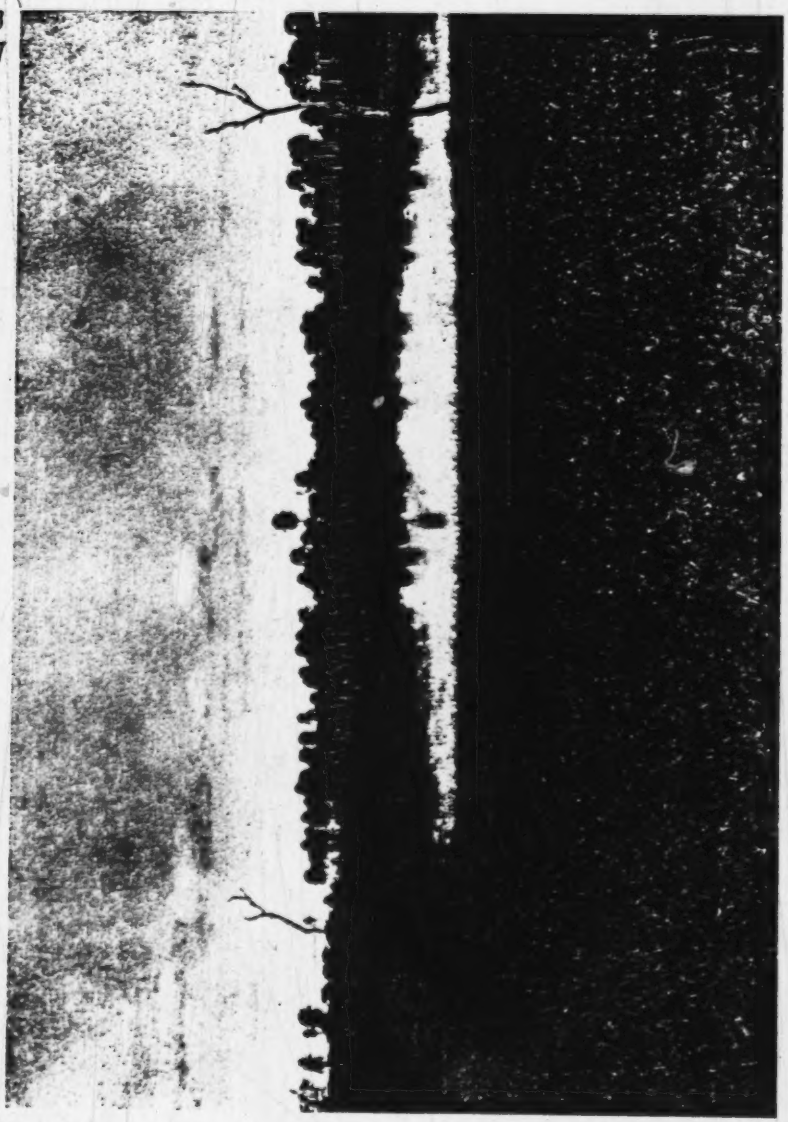

Fig. 9. Lagoon near a grove of fan palms (Copernicia australis). Tatarenda. Gran Chaco, Bolivia Photo. A. v. R.

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1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

●137

Fig. 10. Grove of fan-palms (Copernicia australis). Neighbourhood of Tatarenda. Gran Chaco. Bolivia. Photo. Rob. Fries.

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● 137

Fig. 12 Primeval forest in the district south of Tartagal, Gran Chaco, Argentina. Photo, E. v. R.

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137

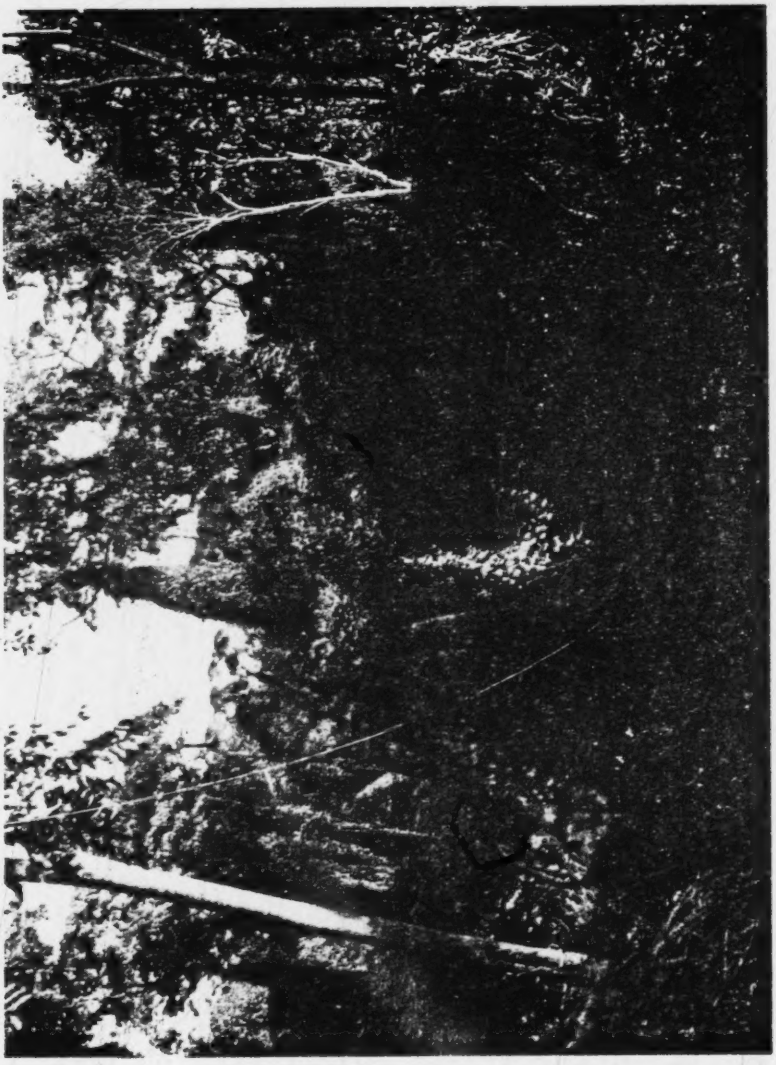

Fig. 13. Primeval forest covered with lianas. To the left, in foreground, these form a net over a young, growing tree; in the background there is visible a forest giant, the trunk of which is perfectly hidden beneath a cone-shaped, compact covering of interwoven creepers. Primeval forest tract, south of Tartagal, Gran Chaco, Argentina. Photo. E. v. K.

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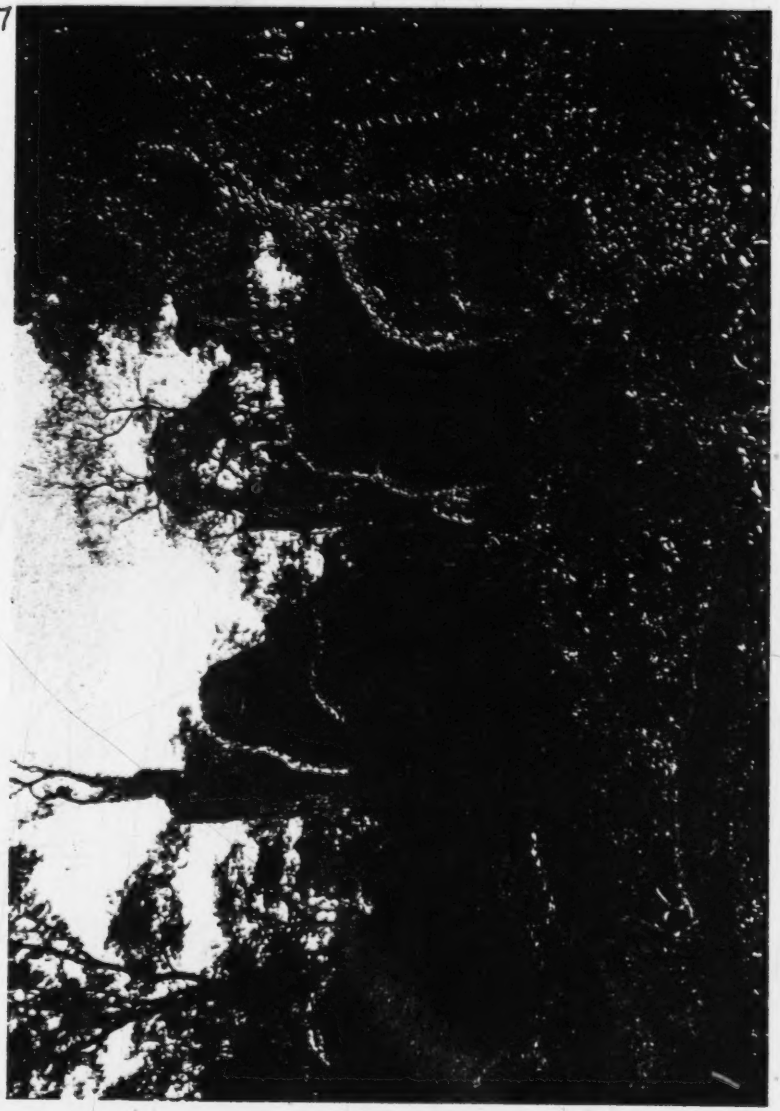

Fig. 14. Primeval forest, with trees completely covered with, and killed by, lianas. District south of Tartagal, Gran Chaco, Argentina. Photo, E. v. R.

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A C 133 river into the interior you will find numerous remains of old river-beds, which in places now form lakes. A few miles from the Andes there is not a stone to be found in the Chaco. The soil consists of fine earth, which is transformed in the dry season into whirling dust, and in the rainy season into mud. In the dry season large tracts are flooded. The Rio Pilcomayo is also of great importance to the Indians on account of the abundance of fish in it.

A C 137 The woods alternate in the Gran Chaco with grassy plains. In some districts there are considerable clumps of palms, not those with paripinnate leaves, which are so useful to the Indians, but with fanshaped leaves, which are of little use. There are no trees from whose bark cloth can be made, as in the primeval forests of N.E. Bolivia. In the woods there grows, however, a spiny plant[1]), known as Caraguatá[2]) or Chahuar[3]). It is of great importance to the Indians, its filaments providing them with material for string rope, clothes etc.

The arrow-grass[4]) which can be used for so many purposes, is lacking in the Chaco. Edible wild fruits occur in the Chaco in an abundance that is quite unusual in S. America. Some of these, such as Algarrobo[5]) Chañar[6]) Tusca[7]) and Mistol[8]), are of supreme importance to the Indians. The abundance of wild fruits, as well as the intensive dryness during part of the year and the floods during another part, account for agriculture being so undeveloped in the Chaco.

A C 136 The stock of game is poor in the interior of the Chaco, or at least in such parts as I have visited. The most impor-

[1]) Bromelia.
[2]) Guarani.
[3]) Quichua.
[4]) Gynerium saccharoides.
[5]) Prosopis.
[6]) Gourliea decortitans.
[7]) Acacia aroma.
[8]) Zizyphus Mistol.